

April 16, 2019

General Joseph F. Dunford, Jr., USMC
Chairman, Joint Chiefs of Staff
9999 Joint Staff Pentagon
Washington, D.C. 20318-9999

Dear General Dunford:

I write to express my profound concern about the rising threat of climate change to the United States military's missions, operational plans, installations, and overall readiness, and to obtain additional information on efforts currently being implemented by Department of Defense (DoD) components to build resilience to and reduce climate change risks.

As a member of the Armed Services Committee, I have examined these risks in detail. On six different occasions during Committee hearings since 2017, I have asked eight different military leaders about the threats and challenges posed by climate change.¹ The Chief of Staff of the Air Force confirmed the need to adapt to climate change as a matter of military readiness; the Chief of Staff of the Army agreed with me regarding the need for the Army to incorporate climate change into operational and strategic planning; the Secretary of the Navy, shortly before his confirmation to that position, indicated that the Navy is "totally aware of rising water issues ... [and] we must protect our infrastructure [or] we lose readiness."² The commanders of both U.S. European Command and U.S. Indo-Pacific Command both indicated to me that they agree with the Intelligence Community's assessment of the climate change threat. The Commander of U.S. Transportation Command indicated that climate change creates "sources of conflict." And the Vice Chairman of the Joint Chiefs of Staff told me that "the dynamics that are happening in our climate will drive uncertainty and drive conflict."³

¹ Senate Committee on Armed Services, "Posture of the Department of the Air Force," April 4, 2019, https://www.armed-services.senate.gov/imo/media/doc/19-34_04-04-19.pdf; Senate Committee on Armed Services, "Posture of the Department of the Army," March 26, 2019, <https://www.armed-services.senate.gov/imo/media/doc/19-26-03-26-19.pdf>; Senate Committee on Armed Services, "Hearing to Consider the Nomination of Richard V. Spencer to be Secretary of the Navy," July 11, 2017, https://www.armed-services.senate.gov/imo/media/doc/17-72_07-11-17.pdf; Senate Committee on Armed Services, "United States European Command and United States Transportation Command," March 5, 2019, https://www.armed-services.senate.gov/imo/media/doc/19-19_03-05-19.pdf; Senate Committee on Armed Services, "United States Indo-Pacific Command and United States Forces Korea," February 12, 2019, https://www.armed-services.senate.gov/imo/media/doc/19-09_02-12-19.pdf; Senate Committee on Armed Services, "Hearing to Consider the Nomination of: General Paul J. Selva, USAF, for Reappointment to the Grade of General and Reappointment to be Vice Chairman of the Joint Chiefs of Staff," July 18, 2017, https://www.armed-services.senate.gov/imo/media/doc/17-75_07-18-17.pdf.

² *Id.*

³ *Id.*

This letter provides additional detail on these responses. Each of these military leaders has acknowledged the threat of climate change to our military's infrastructure and operations, and that adapting to climate change is a factor in military readiness. None has denied the threat of climate change. This uniformity of opinion among military leaders underscores my concern about the need to act vigorously and expeditiously to mitigate this threat.

Threats from Climate Change

Climate change is a growing threat to the United States and the world. According to the Fourth National Climate Assessment (NCA) produced by 13 federal government agencies, climate change threatens human health, access to and quality of water, food, and other basic resources, economic growth, infrastructure, and other aspects of human civilization.⁴ A report by the United Nations Intergovernmental Panel on Climate Change (IPCC) warned that the planet is on track to warm by 1.5 degrees Celsius (2.7 degrees Fahrenheit) above pre-industrial levels by as early as 2030, which would increase the risk of drought, wildfires, floods, and food insecurity.⁵

Our Intelligence Community recognizes the current and future threats posed by climate change to our national security and strategic interests, as explained in the most recent unclassified worldwide threat assessment by the Director of National Intelligence:

Global environmental and ecological degradation, as well as climate change, are likely to fuel competition for resources, economic distress, and social discontent through 2019 and beyond. Climate hazards such as extreme weather, higher temperatures, droughts, floods, wildfires, storms, sea level rise, soil degradation, and acidifying oceans are intensifying, threatening infrastructure, health, and water and food security.⁶

Furthermore, the Intelligence Community observes, "Damage to communication, energy, and transportation infrastructure could affect *low-lying military bases*, inflict economic costs, and cause human displacement and loss of life."⁷

Military Leaders Inform Congress of Climate Change Risks on Multiple Occasions

As a member of the Armed Services Committee, I have asked military leaders on six different occasions about threats posed by climate change to national security and readiness. The responses are summarized below.⁸

⁴ U.S. Global Change Research Program, "Fourth National Climate Assessment," November 23, 2018, https://nca2018.globalchange.gov/downloads/NCA4_Report-in-Brief.pdf.

⁵ International Panel on Climate Change, "Global Warming of 1.5 Degrees Celsius – Summary for Policymakers," October 8, 2018, https://www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15_SPM_version_stand_alone_LR.pdf.

⁶ Senate Select Committee on Intelligence, "Statement for the Record – Worldwide Threat Assessment of the US Intelligence Community," January 29, 2019, <https://www.dni.gov/files/ODNI/documents/2019-ATA-SFR---SSCI.pdf>.

⁷ *Id.* (emphasis added)

⁸ Senate Committee on Armed Services, "Posture of the Department of the Air Force," April 4, 2019, https://www.armed-services.senate.gov/imo/media/doc/19-34_04-04-19.pdf; Senate Committee on Armed Services,

Air Force

On April 4, 2019, I questioned General David L. Goldfein, Chief of Staff of the U.S. Air Force, and Heather Wilson, Secretary of the U.S. Air Force, at a Senate Armed Services Committee hearing on “the posture of the Department of the Air Force.” In that hearing, we had the following exchange:

Senator Warren: Does adapting military bases and other infrastructure to climate change contribute to Air Force readiness?

General Goldfein: It does, Ma’am.

Senator Warren: Do you think it is prudent for the Air Force to incorporate climate change when making strategic decisions like strategic basing decisions, for example?

Secretary Wilson: [T]he resilience of our bases is very important because we fight from our bases. We don’t leave our bases to fight. We fight from our bases. And so their resilience is very important.”

Army

On March 26, 2019, I questioned General Mark A. Milley, Chief of Staff of the U.S. Army, at a Senate Armed Services Committee hearing on “the posture of the Department of the Army.” In that hearing, we had the following exchange:

Senator Warren: So, do you think it would be prudent for the Army to incorporate climate change into operational and strategic planning?

General Milley: We already do.

Senator Warren: Good. And how would you rate Army installations, as a whole, in terms of their climate-change resiliency?

“Posture of the Department of the Army,” March 26, 2019, <https://www.armed-services.senate.gov/imo/media/doc/19-26-03-26-19.pdf>; Senate Committee on Armed Services, “Hearing to Consider the Nomination of Richard V. Spencer to be Secretary of the Navy,” July 11, 2017, https://www.armed-services.senate.gov/imo/media/doc/17-72_07-11-17.pdf; Senate Committee on Armed Services, “United States European Command and United States Transportation Command,” March 5, 2019, https://www.armed-services.senate.gov/imo/media/doc/19-19_03-05-19.pdf; Senate Committee on Armed Services, “United States Indo-Pacific Command and United States Forces Korea,” February 12, 2019, https://www.armed-services.senate.gov/imo/media/doc/19-09_02-12-19.pdf; Senate Committee on Armed Services, “Hearing to Consider the Nomination of: General Paul J. Selva, USAF, for Reappointment to the Grade of General and Reappointment to be Vice Chairman of the Joint Chiefs of Staff,” July 18, 2017, https://www.armed-services.senate.gov/imo/media/doc/17-75_07-18-17.pdf.

General Milley: That is a work in progress. So, we're evaluating those and coming up with a list. There's some -- the Army is -- by its nature, is more inland than on the coast, so the climate change, as it affects some of the Army installations, varies. The coastal ones tend to, probably, have greater impact. But, that doesn't mean the ones on the interior of the country don't. So, we're evaluating all the variety of bases we have.

Navy

On July 11, 2017, I questioned Richard Spencer, then the nominee to be Secretary of the U.S. Navy, at a Senate Armed Services Committee hearing on his nomination. In that hearing, we had the following exchange:

Senator Warren: Mr. Spencer, do you believe that climate is changing and that climate change will continue to affect the Navy's installations and missions?

Mr. Spencer: Senator, the Navy, from my briefings to date, is totally aware of rising water issues, storm issues, et cetera. We must protect our infrastructure. And I will work hard to make sure that we are keeping an eye on that because without the infrastructure, we lose readiness.

Senator Warren: So I take that as a yes?

Mr. Spencer: Yes, all about readiness.

Senator Warren: Good. And if confirmed, under your leadership, will the Navy prepare for climate change? I think this is where you were going about readiness. And I want to say that both in terms of preparing our own bases and installations and preparing for the crises and the insecurity that climate change will exacerbate around the world.

Mr. Spencer: Yes, Senator.

European Command and Transportation Command

On March 5, 2019, I questioned General Curtis M. Scaparrotti, Commander of U.S. European Command, and General Stephen R. Lyons, Commander of U.S. Transportation Command, at a Senate Armed Services Committee hearing on the postures of these combatant commands. In that hearing, we had the following exchange:

Senator Warren: General Scaparrotti and General Lyons, do you agree with the intelligence community's assessment of the climate change threat?

General Scaparrotti: I do, and I believe that, as you noted, much of this will be drivers for potential conflict, or at least very difficult situations that nations have to deal with.

Senator Warren: Yes, thank you. General Lyons, do you also agree?

General Lyons: Ma'am, I agree. These are sources of conflict and we certainly have to be prepared to respond to them.

Indo-Pacific Command

On February 12, 2019, I questioned Admiral Philip Davidson, Commander of U.S. Indo-Pacific Command at a Senate Armed Services Committee hearing on the "United States Indo-Pacific Command and United States Forces Korea." In that hearing, we had the following exchange:

Senator Warren: Admiral Davidson do you agree with the intelligence community's assessment of the climate change threat?

Admiral Davidson: Yes, ma'am.

Senator Warren: So how does climate change impact operations in your area of responsibility and what are you doing to prepare for climate change?

Admiral Davidson: Well, the immediate manifestation, ma'am, is the number of ecological disaster events that are happening. ... And one of the things that my headquarters does is we run a center for excellence in disaster management. That training is available not just to the Title 10 folks but also our interagency here in the United States, and we export those courses as well to countries throughout the Indopacific and really globally to help assist them in these matters.

Vice Chairman of the Joint Chiefs of Staff

On July 18, 2017, I questioned General Paul J. Selva, Vice Chairman of the Joint Chiefs of Staff, at a Senate Armed Services Committee hearing on his renomination to the same position. In that hearing, we had the following exchange:

Senator Warren: General Selva, what impact do you believe that the change in climate will have on the military services? And what do you believe the Department of Defense should be doing now to prepare for this impact?

General Selva: Thank you, ma'am. The dynamics that are happening in our climate will drive uncertainty and will drive conflict. ... So I think we need to be prepared for those. It will cause us to have to address questions like humanitarian disaster relief. It will also cause us to have to focus on places where climate instability might cause actual political instability in regions of the world we had not previously had to pay attention to.⁹

The Need for Additional DoD Progress on Combating Climate Change

Natural disasters – which have been and will be exacerbated by climate change – have affected and continue to affect military infrastructure across our country. Last year, Hurricane Florence and its aftermath decimated Camp Lejeune and hundreds of Marine Corps facilities on that base in North Carolina,¹⁰ and shortly thereafter, Hurricane Michael ripped through Tyndall Air Force Base in Florida.¹¹ In a recent posture statement to Congress on impacts to readiness, the Marine Corps Commandant, General Robert B. Neller, described Hurricane Florence as “the wettest tropical storm ever recorded in the Carolinas” and Hurricane Michael as “the strongest storm in terms of maximum sustained wind speed to hit the United States since Hurricane Andrew in 1992.”¹² In a recent memo to the Secretary of the Navy, General Neller cited Hurricanes Michael and Florence on his list of “unplanned and unbudgeted factors” that are “imposing unacceptable risk to Marine Corps combat readiness[.]”¹³ Furthermore, earlier this year, floodwaters swept through Offutt Air Base in Nebraska, which houses U.S. Strategic Command.¹⁴ Without Congress providing nearly \$5 billion in emergency supplemental funding to recover from the disasters at Tyndall and Offutt, the Air Force “must cut critical facility and readiness requirements, driving Air Force wide operational risks.”¹⁵

⁹ *Id.*

¹⁰ NBC News, “Camp Lejeune is still a mess 6 months after Hurricane Florence. Where's the money for repairs?” Courtney Kube and Mosheh Gains, March 30, 2019, <https://www.nbcnews.com/news/military/camp-lejeune-still-mess-6-months-after-hurricane-florence-where-n986456>.

¹¹ Air Force Times, “Tyndall and, now, Offutt’s recovery costs are creating an infrastructure cash crunch,” Steven Losey, March 22, 2019, <https://www.airforcetimes.com/news/your-air-force/2019/03/22/tyndall-and-now-offutts-recovery-costs-are-creating-an-infrastructure-cash-crunch/>.

¹² Senate Committee on Armed Services, “Statement of General Robert B. Neller, Commandant of the Marine Corps As Delivered to Congressional Defense Committees on the Posture of the United States Marine Corps,” April 9, 2019, https://www.armed-services.senate.gov/imo/media/doc/Neller_04-09-19.pdf.

¹³ LA Times “Read the Internal Memos from Marine Corps Commandant Robert Neller,” March 21, 2019, <https://www.latimes.com/nation/politics/la-marine-corps-commandant-memos-20190321-story.html>.

¹⁴ Associated Press, and Robert Burns, “Offutt flooding exposes threat to military posed by climate change,” Margery A. Beck, Ellen Knickmeyer, March 22, 2019, https://journalstar.com/news/state-and-regional/federal-politics/offutt-flooding-exposes-threat-to-military-posed-by-climate-change/article_bc71aaf2fed-5f72-b38a-6150c3e67bb8.html.

¹⁵ U.S. Air Force, “Natural Disaster Supplemental,” March 23, 2019, https://admin.govexec.com/media/gbc/docs/pdfs_edit/fy19_disaster_supplemental_1_page_23mar_final.pdf.

DoD has recognized the threat of climate change for years, noting in its 2010 Quadrennial Defense Review that “climate change will affect DoD in two broad ways. First, climate change will shape the operating environment, roles, and missions that we undertake. ... Second, DoD will need to adjust to the impacts of climate change on our facilities and military capabilities.”¹⁶ A 2016 Department Directive, which remains active today, observes that the “DoD must be able to adapt to current and future operations to address the impacts of climate change in order to maintain an effective and efficient U.S. military.”¹⁷ Furthermore, that Directive instructs “mission planning and execution” to include 1) identifying the effects of climate change on our military’s mission, 2) consider those climate change effects when developing operational plans, and 3) build the military’s climate change resiliency by anticipating the risks resulting from this phenomenon.¹⁸

Pursuant to Section 335 of the Fiscal Year 2018 National Defense Authorization Act (NDAA), the Department of Defense submitted a report to Congress “on vulnerabilities to military installations and combatant commander requirements resulting from climate change over the next 20 years,” and an explanation of efforts underway to address this threat.¹⁹ I welcome the common sense efforts identified in this report to adapt our military infrastructure to climate change-related threats: for example: Patrick Air Force Base (Florida) imposes state building code hurricane requirements and floor plans for all new construction based on flood plain and storm surge data; Joint Base Langley-Eustis (Virginia) “requires that all new development is constructed at a minimum elevation of 10.5 feet above sea level” and “is using a flood visualization tool to understand flooding impacts across the base”; and after several soldiers died during a training exercise that required crossing a river, Fort Hood (Texas) “replaced the two most dangerous low water crossings with bridges [and] installed stream and depth gauges at critical locations ... to better monitor and predict flash flooding.”²⁰

However, the Department’s report on climate change contained several deficiencies. It failed to assess the climate vulnerabilities of all military installations in the DoD; it contained no assessment of Marine Corps bases or overseas bases, no clear list of the ten military installations within each service that are most vulnerable to climate change (as explicitly required by the FY 2018 NDAA); a vague methodology for determining the climate change vulnerability of the 79 bases that the report chose to assess; and no estimate of the costs to mitigate the effects of climate change on affected bases.²¹

¹⁶ U.S. Department of Defense, “Quadrennial Defense Review Report,” February 2010, <http://archive.defense.gov/qdr/QDR%20as%20of%2029JAN10%201600.pdf>.

¹⁷ U.S. Department of Defense, “DoD Directive 4715.21 – Climate Change Adaptation and Resilience,” January 14, 2016 (effective), <https://dod.defense.gov/Portals/1/Documents/pubs/471521p.pdf>.

¹⁸ *Id.*

¹⁹ National Defense Authorization Act for Fiscal Year 2018, <https://www.congress.gov/bill/115th-congress/house-bill/2810/text>.

²⁰ U.S. Department of Defense, “Report on Effects of a Changing Climate to the Department of Defense,” January 10, 2019, <https://media.defense.gov/2019/Jan/29/2002084200/-1/-1/1/CLIMATE-CHANGE-REPORT-2019.PDF>.

²¹ *Id.*

In addition, a Government Accountability Office (GAO) office report in November 2017 made six recommendations to DoD to adapt its overseas infrastructure to climate change.²² While the Department partially agreed with four of these recommendations, a subsequent GAO report issued this year indicated that DoD has not fully implemented any of them.²³ Collectively, these deficiencies suggest that the Department can do more to identify climate change impacts to its operations and installations and take concrete actions to mitigate these impacts.


The Department of Defense must do more than simply acknowledge or take piecemeal actions to address climate change while it increasingly threatens and harms our military's infrastructure and operations. Fundamentally, adapting to climate change is a necessary component of maintaining readiness. We must act decisively to prepare for this threat, and our military is as capable as anyone of leading the way.

Accordingly, I request unclassified responses to the following questions by May 13, 2019:

1. Please provide a written summary of DoD's comprehensive approach to building resilience to climate change risks, including a summary of the most effective efforts currently being implemented by the military to build resilience to these risks.
2. Please provide a written summary of DoD's comprehensive approach to reducing climate change, including a summary of the most effective efforts currently being implemented by the military to reduce carbon emissions.
3. Please provide an update on the status of the military's implementation of the 2017 GAO recommendations for DoD to adapt its overseas infrastructure to climate change risks.

Thank you for your attention to this important issue affecting military readiness.

Sincerely,



Elizabeth Warren
United States Senator

²² U.S. Government Accountability Office (GAO), "Climate Change Adaptation - DOD Needs to Better Incorporate Adaptation into Planning and Collaboration at Overseas Installations," November 2017, <https://www.gao.gov/assets/690/688323.pdf> (GAO-18-206).

²³ U.S. Government Accountability Office (GAO), "High-Risk Series - Substantial Efforts Needed to Achieve Greater Progress on High-Risk Areas," March 2019, <https://www.gao.gov/assets/700/697245.pdf> (GAO-19-157SP).